## REMARKS

Claims 1, 3-11, and 13-20 are pending. Claims 1, 3-7, 9, 11, and 13-18 have been amended, claims 2 and 12 have been canceled, and new claims 19 and 20 have been added to recite additional features of the embodiments disclosed in the specification. The claim amendments, in part, remove the acronyms noted by the Examiner and also have been made to overcome the claim objections.

Reconsideration of the application is respectfully requested for the following reasons.

I.      **Objection to the Specification**

In the Office Action, the Examiner objected to the specification on grounds that the first line of the first page does not include a sentence acknowledging Applicants' claim for foreign priority. However, no such claim is required to be made in the specification. See MPEP § 201.11 which indicates the specification needs to identify only related domestic (specifically, provisional and non-provisional **U.S.**) applications in a cross-referencing paragraph. See also 35 USC § 120.

The MPEP does not require the specification to identify foreign applications to which priority is claimed under 35 USC § 119. (See MPEP § 201.13). This claim may be made, for example, in the original application papers, such as in the Declaration and/or in an application data sheet. Withdrawal of the objection is respectfully requested for the foregoing reasons.

## II.  The Rejections under 35 USC § 103(a)

Claims 1-4 were rejected for being obvious in view of the Fukunaga patent in view of

common knowledge in the art, claims 9, 12, 13, and 15 were rejected for being obvious in view

of a Fukunaga-Khansari combination, claims 5 and 6 were rejected for being obvious in view of

a Fukunaga-common knowledge-Lin combination, claims 7 and 8 were rejected for being

obvious in view of a Fukunaga-common knowledge-Bannon, claims 10, 11, and 17 were rejected

for being obvious in view of a Fukunaga-Khansari-Lin combination, claims 14 and 18 were

rejected for being obvious in view of a Fukunaga-Khansari-Bannon combination. These

rejections are traversed for the following reasons.

### A.  Claim 1 and its Dependent Claims

Claim 1 has been amended to recite that the video encoder includes:

(1)  "the first error concealment processing unit performs the error

concealment for a frame that corresponds to the error information received from the video

decoder, the error concealment generating a reference frame on which the data hiding operation

is performed,

(2)  the data hiding operation including embedding a number of bits of the

error information into a frame currently being encoded, said embedding performed by

modifying at least one parameter of the frame currently being encoded and that the video

decoder includes:

9

(3)     a data extraction unit for "extracting the hidden data including the embedded number of bits provided from the video encoder."

The Fukunaga patent discloses a video encoder which receives error information from decoder. The error information includes a frame number corresponding to an error frame, and one or more blocks of the error frame. The error information is sent to a reference-picture modification unit 107, which replaces data in the received error frame with data from a previous frame. From the Office Action, the Examiner appears to have taken the position that the replacement of this data effectively constitutes a concealment operation. Accordingly, the Examiner has indicated that unit 107 corresponds to the first error concealment processing unit of claim 1. (See columns 4 and 5 of Fukunaga with reference to Figure 4).

The Fukunaga encoder also includes an end-information generator 109, which obtains a frame number of the error frame and passes this frame number to transmission unit 103. The transmission unit transmits the frame number with a coded frame to the decoder. From the Office Action, the Examiner appears to have taken the position that end-information generator 109 constitutes the data hiding processing unit of claim 1.

However, even given this correspondence, the Fukunaga patent does not teach or suggest the features added by amendment to claim 1. Specifically, end-information generator 109 does not perform a data hiding operation which involves "embedding a number of bits of the error information into a frame currently being encoded, said embedding performed by modifying at least one parameter of the frame currently being encoded."

Moreover, Fukunaga does not teach or suggest that its video decoder includes a data extraction unit for "extracting the hidden data including the embedded number of bits provided from the video encoder." Applicants further submit that these features are not common knowledge to one skilled in the art, or anyone else for that matter, when taken in the context of the claimed invention.

Based on the foregoing differences, it is respectfully submitted that claim 1 is allowable over Fukunaga in view of common knowledge, and that claims 3-8 are allowable at least by virtue of their dependency from claim 1.

In rejecting the claims, the Examiner further relied on the Lin publication. The Lin publication discloses introducing error-detection information into a bitstream by varying quantized DCT coefficients. However, the Lin publication does not teach or suggest performing a data hiding operation that includes embedding a number of bits of the error information into a frame currently being encoded, said embedding performed by modifying at least one parameter of the frame currently being encoded. Lin also fails to teach or suggest a video decoder that includes a data extraction unit that extracts the hidden data including the embedded number of bits provided from the video encoder.

Based on these differences, it is respectfully submitted that claim 1 is allowable over a Fukunaga-Lin combination, and that claims 3-8 are allowable at least by virtue of their dependency from claim 1. Applicants further submit that the remaining cited references also fail to teach or suggest the features added by amendment to claim 1.

Dependent claim 3 that the number of bits are "embedded by modifying said at least one parameter of the frame currently being encoded is indicative of the frame number." These features are not taught or suggested by the cited references, whether taken alone or in combination.

Dependent claim 5 recites that "said at least one parameter is at least one of a quantization parameter corresponding to the frame currently being encoded or a level value of a block to which a discrete cosine transform is performed." These features are not taught or suggested by the cited references, whether taken alone or in combination.

Dependent claim 6 recites that "the level value corresponds to a value obtained by dividing a discrete cosine transform coefficient by the quantization parameter." These features are not taught or suggested by the cited references, whether taken alone or in combination.

### B.    Claim 9 and its Dependent Claims

Claim 9 recites that "the hidden data is extracted based on a number of bits of error information embedded a reference frame included in the compressed video stream, said the number of bits embedded a value of at least one parameter of the reference frame." These features are not taught or suggested by the cited references, whether taken alone or in combination. Applicants therefore submit that claim 9 and its dependent claims are allowable.

Dependent claim 11 recites that the "at least one parameter includes at least one of a quantization parameter or a level value of a block to which a discrete cosine transform is

performed." These features are not taught or suggested by the cited references, whether taken

alone or in combination.

### C.  Claim 15 and its Dependent Claims

Claim 15 recites features similar to those that patentably distinguish claim 1 from

the cited references. For example, claim 15 recites that the data hiding operation includes (1)

"embedding a number of bits of the extracted error frame information into a frame currently

being encoded, said embedding performed by modifying at least one parameter of the frame

currently being encoded," (2) "transmitting the currently encoded frame containing the

embedded number of bits to the video decoder," and (3) "extracting the embedded number of

bits transmitted from the video encoder at the video decoder." Applicants submit that claim 15

and its dependent claims are allowable based on these features.

Dependent claim 17 recites that "said at least one parameter includes at least one of

a quantization parameter or a level value of a block to which a discrete cosine transform  is

performed." These features are not taught or suggested by the cited references, whether taken

alone or in combination.

## III.  New Claims

New claims 19 and 20 have been added to the application.

Claim 19 recites that the data hiding operation in claim 1 is "performed before

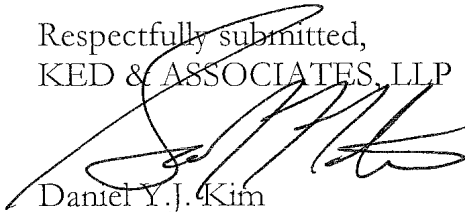quantization of the frame currently being encoded." The cited references do not teach or suggest

these features, e.g., the Lin publication discloses introducing error-detection information into a

bitstream. However, this information is introduced _after_ quantization. See Paragraph [0031].

Applicants therefore submit that claim 19 is allowable, not only by virtue of its dependency from

claim 1, but also based on the features separately recited therein.

Claim 20 recites similar features depending from claim 15.

In view of the foregoing amendments and remarks, it is respectfully submitted that the

application is in condition for allowance. Favorable consideration and prompt allowance are

earnestly solicited.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is

hereby made. Please charge any shortage in fees due in connection with the filing of this,

concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and

please credit any excess fees to such deposit account.

Respectfully submitted,
KED & ASSOCIATES, LLP

Daniel Y.J. Kim
Registration No. 36,186

Samuel W. Ntiros
Registration No. 39,318

P.O. Box 221200
Chantilly, Virginia 20153-1200
(703) 766-3777 DYK/SWN/kzw
**Date:** November 26, 2007
**Please direct all correspondence to Customer Number 34610**